1 INTRODUCTION

1.1 BACKGROUND

Environmental Resources Management (ERM) in association with Delft Hydraulics (Delft), ACLA Limited (ACLA) and Murray Harrison (MH) has been commissioned by the Drainage Services Department (DSD) to undertake the Sha Tin Sewage Treatment Works, Stage III Extension Environmental Impact Assessment Study (the Study).

The Sha Tin Sewage Treatment Works Stage III Extension (the Project) is planned to come into operation in 2003 and will provide additional sewage treatment facilities to cope with the anticipated increases in sewage flow and load in the Sha Tin catchment area. These increases are principally attributed to population growth. The Project will also enable the works to comply with a new set of effluent quality standards, proposed by the Environmental Protection Department (EPD). The design of the Project is currently in progress and a *Preliminary Design Report*[1] was issued by DSD in May 1998. An Environmental Review (ER) of the Project had been conducted by EPD in August 1997. The ER concluded that an environmental impact assessment (EIA) study for the Project was required.

1.2 OBJECTIVES OF THE EIA STUDY

The objectives of the EIA Study are described in the Brief and are as follows:

i. *to describe the Project and associated works together with the requirements and environmental benefits for carrying out the Project;*

ii. *to identify and describe the elements of the community and environment likely to be affected by the Project, and/or likely to cause adverse impacts upon the Project, including both the natural and man-made environment and the associated environmental constraints;*

iii. *to identity and quantify emission sources and determine the significance of impacts on sensitive receivers and potential affected uses;*

iv. *to identity existing landscape & visual quality in the "study area" and evaluate the landscape & visual impact of the Project;*

v. *to identify any negative impacts on sites of cultural heritage and to propose measures to mitigate these impacts;*

vi. *to propose the provision of infrastructure or mitigation measures so as to minimise pollution, environmental disturbance and nuisance during construction and operation of the Project;*

vii. *to investigate the feasibility, effectiveness and implications of the proposed mitigation measures;*

[1] Drainage Services Department (1998). *PWP Item 4276DS Sha Tin Sewage Treatment Works, Stage 3 Preliminary Design Report (Final).* May 1998.

viii. *to identify, predict and evaluate the residual (i.e. after practicable mitigation) environmental impacts and cumulative effects expected to arise during the construction and operation phases of the Project in relation to the sensitive receivers and potential affected uses;*

ix. *to identify, assess and specify methods, measures and standards, to be included in the detailed design, construction and operation of the Project which are necessary to mitigate these residual environmental impacts and cumulative effects and reduce them to acceptable levels; and*

x. *to design and specify the environmental monitoring and audit requirements during the execution of the Project.*

There are a number of issues which, although specified in the *Environmental Impact Assessment Ordinance* (*EIAO*) and the associated *Technical Memorandum on Environmental Impact Assessment Process* (TM), are not explicitly referred to in the Brief (see *Annex A*). These issues include construction phase air quality, water quality and noise impacts and will be addressed qualitatively in the EIA Study, as agreed and documented at the Study inception stage[2].

1.3 REPORT STRUCTURE

The EIA Report comprises the following sections.

- *Section 2* provides an overview of the Project outlining its key requirements, location, design and construction, as well as a description of the EIA Study Area and the benefits of the Project.

- *Section 3* presents an assessment of potential impacts to air quality during both the construction and operational phases, paying particular attention to the potential for odour impacts to the surrounding community.

- *Section 4* presents the results of the water quality assessment, in particular addressing the impact of increased total effluent flows and loads on Kai Tak Nullah, Kowloon Bay, Kwun Tong Typhoon Shelter and other sensitive receivers in the wider Victoria Harbour Water Control Zone.

- *Section 5* presents an assessment of the waste management issues arising during the construction and operational phases of the Project. Key issues during the operational phase are related to the management of sludge, grit and screenings.

- *Section 6* presents the results of a contaminated land study and addresses impacts due to the removal of contaminated material for off-site disposal during the construction phase.

- *Section 7* details the results of a visual impact assessment and investigates the potential opportunities for upgrading the appearance of the facilities by landscaping and other measures.

[2] Environmental Resources Management (1998). *Sha Tin Sewage Treatment Works, Stage III Extension Environmental Impact Assessment Study: Inception Report*, 12 August 1998.

- Issues related to the impact of the Project on existing and planned landuses in the Study Area are presented in *Section 8*.

- Potential environmental impacts other than those addressed in *Sections 3* to *8* are discussed in *Section 9*.

- *Section 10* provides an overview of the various processes undertaken in the Project and their potential environmental impacts.

- *Section 11* presents the requirements for environmental monitoring and audit (EM&A) during the construction and operation phases of the Project.

- *Section 12* summarises the conclusions and key recommendations of the EIA Study.

In addition, detailed supplementary information associated with the various elements of the Study are presented as a series of *Annexes.*

- *Annex A* presents the Brief for the EIA Study.

- *Annex B* describes the manner in which odour emission rates were estimated for this EIA Study.

- *Annexes C* to *G* present information and results related to the water quality modelling work reported in *Section 4*. *Annex C* shows the results of the calibration of the Delft Model used in the analysis. *Annex D* presents the pollution loads to the Kai Tak Nullah and other discharges to the Victoria Harbour. *Annex E* presents the tables of water quality modelling results. *Annexes F* and *G* illustrate the model output in the form of contour plots for the wet and dry seasons, respectively.

- *Annex H* presents the detailed methodology for the assessment of land contamination in the two potentially contaminated areas to be developed for the Project.

- *Annex I* specifies the requirements for a further land contamination study to determine the extent of land contamination at the site and whether the contaminated material meet the TCLP acceptance criteria for landfill disposal.

- *Annex* J presents the graphs of observed water quality in Tolo Harbour and percentage operation of the Tolo Harbour Effluent Export Scheme (THEES).